

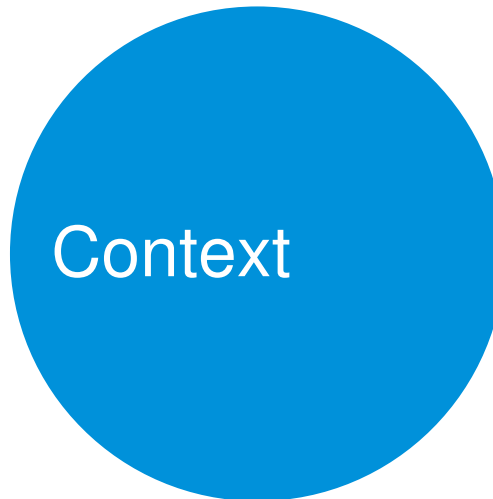
# Predictive Analytics

Iowa Actuaries Club, December 8, 2016

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Senior Actuary



# Agenda



Terminology

# Predictive Modeling

- Advanced analytics
- Machine learning
- Artificial intelligence

Terminology

# General Analysis

- Reporting
- Analysis
- Regression

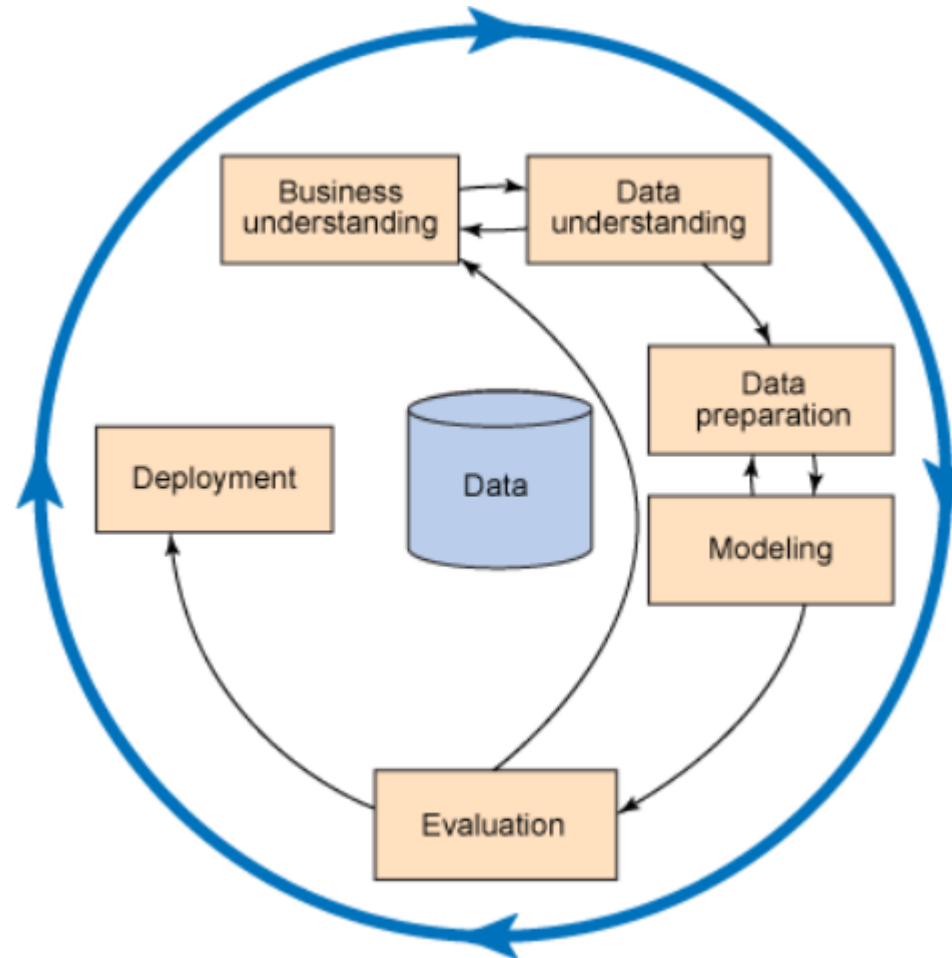
Terminology

# All-Encompassing

- Business intelligence
- Analytics

# CRISP-DM

- Cross Industry Standard Process for Data Mining



Context

# History and Maturity

Life Insurance Company Perspective

Context

# Today

- Buzz words seen frequently
  - Big data
  - Advanced analytics
  - Predictive modeling
- Magazines
- Industry Meetings (SOA, LIMRA, ...)
- Familiar to high-level executives



Context

## 10-15 Years Ago

- Predictive what?
- Much less common at industry meetings
- Not familiar to high-level executives

Context

# Predictive Modeling Maturity

- From less mature to more mature...
  - Life
  - Medical
  - Property and Casualty
  - Banking
  - Retail

# Applications

Life Insurance Company Perspective

Applications

# Sales and Marketing

- Who is more likely to buy?
- New customers
- Existing customers
- Sales leads
- Targeted marketing

## Applications

# Dental Fraud

- Review dental procedures by provider, look for outliers
- Dentist A
  - Commonly submitted 12-20 fillings for a single child visit
  - Review performed
  - Dentist submitted code for fillings (\$70 reimbursement)
  - Actual procedure was sealants (\$30 reimbursement)

## Applications

# Dental Fraud

- Dentist B
  - Submitted unusually large number of crowns
  - Review performed
  - Dentist practices in location with large retiree population

## Applications

# 401(k) Transaction Behavior

- How do participants behave in turbulent markets?
  - Brexit
  - Presidential election
  - Recession
- Applications
  - Call center staffing
  - Financial forecasting

Applications

## Underwriting

- Principal Accelerated Underwriting™
- Individual life products
- Partnered with vendor to develop model



Applications

## Underwriting

- Leverages readily available data sources
  - Prescription drug history
  - Medical Information Bureau
  - Motor vehicle reports
  - Telephone interview

## Applications

# Underwriting

- If model indicates preferred or super-preferred risk category...
  - No fluids
  - No physical exam
  - Decision in 1-2 days instead of 30 days
- Generates buzz with advisors

Applications

# Customer Engagement

- Better outcomes with higher engagement?
- Preferred communication medium?
  - Phone, web, e-mail, letter
- How can the experience be personalized?

## Applications

# Other

- Portfolio management
- Advisor intelligence
- Pricing
  - Claim costs
  - Lapse rates
  - Longevity

Thank you

